

REMARKS

In the Final Office Action dated July 12, 2007, the Examiner rejected claims 22-42. By this paper, the Applicants amend claims 22, 31 and 37, for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 22-42 remain pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Amendments to claims:

Claims 22, 31 and 37 have been amended to read *inter alia*, “oxygen delivery system further configured to channel at least a portion of said oxygen to a biomass gasification system to produce a synthesis gas by partial oxidation of a biomass feedstock.”

Paragraph 5 of specification describes an oxygen delivery system configured to deliver the oxygen from the oxygen delivery system to a biomass gasification system. The biomass gasification system produces a synthesis gas by partial oxidation of a biomass feedstock. Similar information is available from other places in specification e.g. paragraph 15. Thus the added claim limitations are already described in the specification and the amendments do not add any new subject matter.

Claim Rejections under 35 U.S.C. § 112

The Examiner rejected claim 32 under 35 U.S.C. § 112, as being indefinite due to insufficient antecedent basis for “said synthesis gas”. Claim 32 depends on independent claim 31, which has been amended as described above. The amended claim 31 provides antecedent basis for the term “said synthesis gas”. The Applicants hence respectfully request the withdrawal of foregoing rejection under 35 U.S.C. § 112.

Rebuttal of Examiner's response to Arguments

In response to arguments filed on 7th June 2007, the Applicants had mentioned that OTEC, the renewable energy source mentioned in the primary reference Avery, is not intermittent. The Examiner, in response to arguments filed on 7th June 2007 mentions that OTEC is intermittent and has also furnished a U.S. Patent No. 4,982,569, published in 1991, wherein, claim 13 does mention *inter alia* “intermittently operable non-fuel-consuming power generator is an array of ocean thermal electric conversion power generators”.

The Applicants would like to point out to report “SOLAR ENERGY: ITS TECHNOLOGIES AND APPLICATIONS”, authored by P.C. Auh of Brookhaven National Lab., Upton, NY (USA), published on 01-Jun-1978. On page 27, it clearly says, “The major advantage of the OTEC system is in that the virtually unlimited amount of energy is available with no intermittency” (emphasis included).

This is not the only reference that describes non-intermittency of OTEC. This has been described in many other references including but not limited to “SOLAR POTENTIAL ENERGY CONVERSION”, presented by King, Richard James, in *Technology for Energy Conservation: Proceedings of the National Conference*, 1980, p 98-101.

Applicants, hence believe that the OTEC is a *not* an intermittent source of renewable energy, and hence Avery (U.S. Patent No. 4,476,249) cannot anticipate the instant invention.

Claim Rejections under 35 U.S.C. § 103(a)

The Examiner rejected claims 22-30 under 35 U.S.C. § 103(a) as obvious over Avery (U.S. Patent No. 4,476,249, hereinafter Avery) in view of Wolf (PCT Application number WO 01/38456, hereinafter Wolf). Applicants respectfully request reconsideration of these rejections in light of following remarks.

The cited references, taken alone or in hypothetical combination, fail to teach or suggest features recited by independent claim 22.

Turning to the claims, the present independent claim 22 recites, *inter alia*, “an energy generating system for generating energy from an intermittent renewable energy source”

First, the cited references, taken alone or in hypothetical combination, fail to teach or suggest “*intermittent* renewable energy source,” as recited by independent claim 22. Primary reference, Avery discloses use of Ocean Thermal Energy Conversion (OTEC) for power generation. OTEC, although a renewable energy source, is not intermittent. As identified in paragraph 4, “there is a need in the related art for an effective system to implement a method for maintaining uninterrupted hydrogen-based power production utilizing intermittent renewable energy sources”. One of the important aspects of the present invention is that it enables use of intermittent renewable energy sources but maintains uninterrupted power output, *see* paragraph 16. Paragraph 12 describes such intermittent renewable energy sources like wind, solar and tidal energy.

OTEC system is described in Avery at column 2, lines 37-41, as “The OTEC plantships comprise energy producing systems which exploit the difference in temperature between the surface and deep ocean waters to run a Rankine engine or the equivalent and thereby generate electric power”. It is well known that this temperature difference is not cyclic or intermittent like other renewable energy sources mentioned above. Even Wolf does not describe the intermittency aspects in either abstract or Fig. 1.

Thus neither Avery nor Wolf describe or suggest intermittent renewable energy source, and hence their hypothetical combination cannot suggest this aspect, which is one of the important aspects of current invention.

Second, Avery does not describe a gasification system which is configured to channel at least a portion of synthesis gas generated to power generation system as described in Claim 22. In Avery, the synthesis gas produced goes to a catalytic converter for methanol.

Third, the present independent claim 22 recites, *inter alia*, “oxygen delivery system further configured to channel at least a portion of said oxygen to a *biomass gasification* system”

As agreed by the Examiner on page 3 of the office action, Avery discloses system with gasification of coke. It does not indicate biomass gasification. The Examiner has sought to combine Avery with Wolf. Wolf describes gasification of coke that is obtained from biomass. The Examiner argues that combination of Avery and Wolf should anticipate system described in current invention.

The Applicants submit that there is a difference between coal and biomass gasification. The Applicants have described use of biomass instead of coal / coke because biomass generates more hydrogen rich gas than coal. See e.g. “Co-pyrolysis of biomass and coal in a free fall reactor”, Fuel, Volume 86, Issue 3, February 2007, Pages 353-359 mentions - Under the same pyrolysis condition, the H₂ yield (wt.%, daf) generated from biomass is about 5–16 times as high as those generated from coal.”

This is not mentioned in the patent application, because the focus of patent application was not to compare biomass and other feedstocks for hydrogen production. Please note here that the invention teaches a system to produce and use hydrogen. Hence the invention employs biomass gasification than coke / coal gasification that can generate more hydrogen. In fact, one of the embodiments, described in e.g. paragraph 21, teaches use of Water gas shift reaction that the reforms Hydrogen from carbon monoxide (CO)

content of the synthesis gas. Both Avery and Wolf describe production of methanol, which needs both Carbon monoxide and Hydrogen content of synthesis gas.

For at least these reasons among others, the Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 103 for independent claim 22 and all claims dependent thereon.

Avery does not teach all elements of current invention.

With respect to claim 26, the examiner has likened the tidal energy described in present invention with “ocean thermal energy conversion”, OTEC, described in Avery. Applicants would like to highlight that though both of these are renewable energies obtained from oceans, the principle of operation in both of these is quite different. Tidal energy is based on mechanical movements caused due to oceanic tides. OTEC on the other hand, uses the temperature difference between the surface and deep ocean water to run a Rankine cycle there between, *see* Avery, column 2, lines 37-41.

Thus the Applicants submit that the two are quite different and OTEC cannot anticipate use of tidal energy as suggested by the Examiner. Hence Applicant respectfully requests the Examiner to withdraw this rejection.

Invention must be considered as a whole

The Applicants would like to point out that for a 103 (a) rejection, the “claimed invention must be considered as a whole. *See* MPEP 2141 (II) BASIC

CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS. Thus dependent claims 23-30 should be read in light of claim 22 from which it depends.

Since claim 22 has already been shown to be patentably distinct, all claims dependent therefrom also inherit limitations and distinctions of claim 22. Hence the Applicants request the Examiner to withdraw the rejections for claims 23-30.

Conclusion

The Applicants respectfully submit that all pending claims should be in condition for allowance. However, if the Examiner believes certain amendments are necessary to clarify the present claims or if the Examiner wishes to resolve any other issues by way of a telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,

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